G. DRAPER.

MACHINE FOR WARPING YARN.

No. 111,523. Patented Feb. 7, 1871.

Fig. 1.

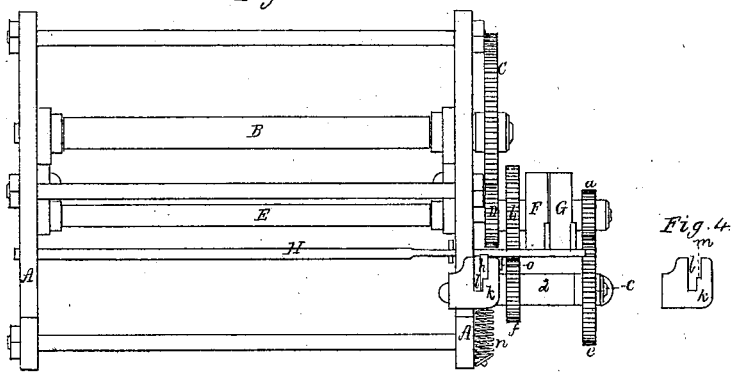


Fig. 4.

Fig. 3.

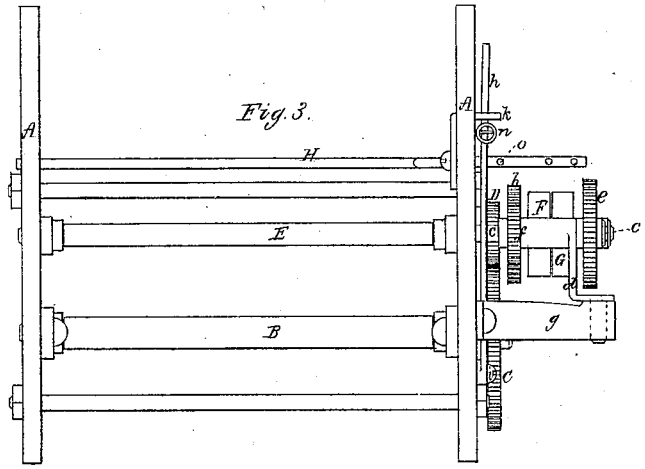
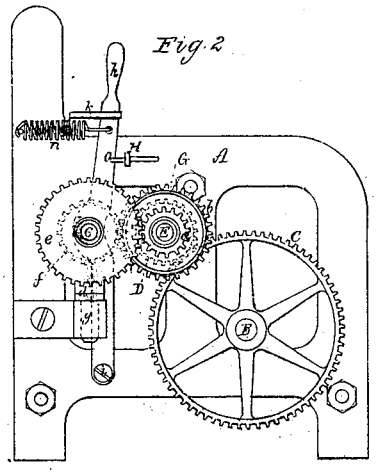


Fig. 2.



Witnesses.

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GEORGE DRAPER, OF HOPEDALE, MASSACHUSETTS.

Letters Patent No. 111,523, dated February 7, 1871.

IMPROVEMENT IN MACHINES FOR WARPING YARN.

The Schedule referred to in these Letters Patent and making part of the same.

To all persons to whom these presents may come:

Be it known that I, GEORGE DRAPER, of Hopedale, of the county of Worcester and State of Massachusetts, have made a new and useful invention having reference to Warpers or Machines for Warping Yarn; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawing, of which—

Figure 1 is a top view;

Figure 2, a side elevation; and

Figure 3, a front elevation of a portion of a warper with my invention applied thereto.

The object of the invention is to enable a warper to be started into operation without the danger of snarling or breaking the threads or yarns, such as is incident to the common warper when started or set in action suddenly at full speed.

The invention is also to enable an attendant to turn forward the heavy bearing and cylinders of the warper, as occasion may require.

The usual speed of the surface of a warper-cylinder is about sixty yards per minute. When a sudden stoppage of the machine takes place, the momentum generated in the spools causes them to more or less slacken the threads or yarns. What are termed "rising and falling rollers" are sometimes employed to take up the slack yarn, and sometimes the beam is allowed to revolve more or less by its momentum. My invention applies to either of these operations.

Frictions or devices have been employed to overcome these difficulties, but such means as have been used heretofore have been more or less uncertain in their operation and not easy of management. My invention, however, requires little experience or skill on the part of the attendant to operate it, and its results are uniform and certain.

In carrying out my invention I combine, with the usual fast-and-loose pulleys and their trains of gears for operating the main cylinder-shaft, another train of gears or mechanism, substantially as hereinafter described, which, when thrown into engagement with the said train when the driving-belt is on the loose pulley, will cause the cylinder-shaft to be run at a very much slower rate of speed than what it would receive from the main train with the driving-belt on its fast pulley.

I also provide the auxiliary train with a shipper or means of throwing it either into or out of engagement with the main train, and I combine with such shipper and the driving-belt shipper a device or mechanism by which the latter, while being moved to change the belt from the loose to the fast pulley, shall so operate the auxiliary-train shipper as to cause it to disengage the auxiliary train with the main train.

By means of the auxiliary train the speed of the warps will be reduced to about six yards per minute, their speed under ordinary circumstances being about ten times as great. The slower speed is to be kept up until the slack may be taken out of the threads or yarns, and the spools are started when the driving-belt is to be shifted upon the fast pulley so as to increase the speed to the normal rate, such taking place without any sudden shock or liability to snarl or break the threads, and thus obviating a serious evil incident to warpers as heretofore constructed and used.

The additional mechanism is of such nature that when the driving-belt has passed so far from the loose pulley upon the fast pulley as to increase the speed of the main cylinder, a projection of the shipper of the belt will, by its action against the shipper of the auxiliary train, force it off its supporting shoulder and allow its retracting spring to move it so as to disengage the auxiliary train from the main train and thereby allow the main cylinder to be run at its normal or greater speed.

In the drawing—

A denotes the warper-frame;

B, the shaft or roller, through the agency of which the warp-beam or main cylinder is to be revolved, there being a spur-gear, C, fixed on the outer part of such shaft or roller.

This gear C engages with a spur-pinion, D, fixed on the driving-shaft E, on which is a fast pulley, F, and a loose pulley, G. The driving-belt is to run on either of these pulleys, as occasion may require, and there is applied to the frame the usual belt-shipper H, which slides horizontally and is arranged in the frame in manner as represented.

In carrying out my invention I fix to the loose pulley, so as to be revolved with and by it, a spur-gear, *a*, and I fix on the driving-shaft a gear, *b*.

I also, on another shaft, *c*, arranged in front of the fast-and-loose pulleys and supported in a standard, *d*, fix two gears *e f*, the larger being to engage with the gear *a* and the smaller with the gear *b*.

The standard I so pivot to an arm, *g*, (projecting from the frame A,) as to enable such standard to revolve or turn horizontally, and I pivot the shaft *c* loosely in a shipper or lever, *h*, arranged against one side of the frame A, such lever at its foot having a fulcrum, *i*.

The lever or shipper *h* extends up through a holder, *k*, fixed to the frame, and provided with a recess or notch, *l*, shaped as represented in top view in Figure 4, wherein the notch is shown as provided with a shoulder, *m*.

A helical spring, *n*, fastened at one end to the frame A, and at the other to the shipper *h*, serves to draw the shipper in a direction away from the belt-shipper.

Furthermore, there is a stud, *o*, projected from the belt-shipper, such stud being to bear against the shipper *h* so as to throw it off the shoulder *m* while the belt-shipper is being moved to transfer the driving-belt from the loose to the fast pulley.

My invention is not designed to run the main cylinder at so slow a rate as to admit of the threads of the spools being successively tied to the warps of the cylinder while in motion, as it would be impracticable to accomplish such at the rate of speed desirable for starting the warper.

I make no claim to any invention described in the United States patent No. 100,070, dated February 22, 1870.

I claim—

1. In combination with a warper a mechanism substantially as described, or its equivalent, for running the warp-cylinder at a fixed uniform rate of speed, such as will enable the slack of the yarns to be taken up and the spools started before putting into operation the mechanism for running such spools at their normal or much faster speed, all being essentially as hereinbefore explained.

2. In combination with the fast-and-loose pulleys F G of a warper, and their train of gears C D for operating the main cylinder-shaft B, the auxiliary train of gears *a b e f* to operate with such main train, and to be operated by the loose pulley, by means and in manner substantially as described.

3. In combination with the fast-and-loose pulleys F G, and the main and auxiliary trains of gears C D *a b e f*, their belt-shifters H *h*, and the shouldered holder *k*, the spring *n*, and the stud *o* applied to the main and auxiliary belt-shippers, such stud and spring being to operate as and for the purpose as explained.

GEORGE DRAPER.

Witnesses:
R. H. EDDY,
J. R. SNOW.